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HUNTERS POINT
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PRC

May 5, 1997

Mr. Bill Radzevich
Engineering Field Activity West
Naval Facilities Engineering Command
900 Commodore Drive, Building 208
San Bruno, CA 94066-2402

Subject: **Final Proposed Plan for Parcel D**
Hunters Point Shipyard, San Francisco, California
Contract No. N62474-94-D-7609 (CLEAN II), Contract Task Order No. 005

Dear Mr. Radzevich:

At the Navy's direction, PRC Environmental Management, Inc. (PRC), is submitting 15 copies of the final Proposed Plan for Parcel D at Hunters Point Shipyard. At your direction, final copies are also being mailed from our PRC San Francisco office to everyone on the site mailing list.

If you have any questions, please contact Roberta Novak at (847) 255-4166 or me at (415) 543-4880.

Sincerely,

Roberta M. Novak

RMN James Sickles
PRC Installation Coordinator

Enclosures

cc: Claire Trombadore, U.S. EPA (1 copy)
Chein Kao, DTSC (2 copies)
Rich Hiett, RWQCB (1 copy)
Karla Brasaemle, Roy F. Weston (1 copy)
Gina Kathuria, San Francisco Dept. of Public Health (1 copy)

NAVY'S PROPOSED PLAN FOR HUNTERS POINT SHIPYARD PARCEL D

May 1997

INTRODUCTION

The U.S. Navy invites you to comment on the results of environmental investigations and the proposed plan for cleaning up Parcel D of Hunters Point Shipyard (HPS) in San Francisco, California. This proposed plan explains the Navy's preferred cleanup alternative for addressing soil and groundwater contamination at Parcel D and discusses the other cleanup alternatives that were considered. It also explains how you can get involved in selecting the final cleanup plan and asks for your input on the preferred alternative with respect to the other alternatives considered.

The information in this proposed plan is based on the **remedial investigation (RI)** and **feasibility study (FS)** reports prepared for HPS Parcel D. These documents are available for public review at the information repositories listed on the last page of this fact sheet. (All words that appear in **bold** type are defined in the glossary on Page 15.)

The preferred alternative would include (1) excavating contaminated soil that poses an unacceptable risk at Parcel D and transporting it off site for safe disposal in a licensed disposal facility, (2) repairing storm drains, sealing storm drain bedding material, and removing steam lines to prevent contaminants from entering San Francisco Bay, and (3) monitoring groundwater to ensure that contaminants do not enter the Bay. Although contaminants were detected in groundwater, the groundwater does not pose a threat to human health or the environment and, therefore, no groundwater cleanup action is required. The Navy's preferred alternative would protect human health and the environment and help expedite cleanup and transfer of Parcel D to the City and County of San Francisco for reuse. The City has developed a reuse plan for Parcel D that consists of mostly commercial (industrial) use. The cleanup of Parcel D is one part of a base-wide cleanup effort being conducted at HPS.

The preferred alternative is not a final plan; it is only a proposal. The purpose of this document is to request input from the public before a final cleanup plan is selected. A public comment period on the proposed plan will be held from May 11, 1997, to June 10, 1997. The public is encouraged to comment on the Navy's preferred alternative and the other alternatives considered.

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YOUR COMMENTS MAKE A DIFFERENCE

Your comments are very important. The Navy will consider your comments before making a decision on a cleanup plan for Parcel D. The final decision will not be made until all public comments have been considered. The comment sheet that appears in the insert of this fact sheet will make it easy for you to submit your comments.

You are invited to attend a public meeting about the proposed plan for HPS Parcel D on:

MAY 21, 1997
6:00 PM TO 8:00 PM

AT THE GLORIA R. DAVIS ACADEMIC MIDDLE SCHOOL
1550 EVANS AVENUE
SAN FRANCISCO, CA 94124

At the meeting, Navy representatives will explain the proposed plan and the other alternatives considered for cleaning up HPS Parcel D contamination. You will also have an opportunity to ask questions and submit formal comments both orally and in writing.

The Navy, the lead agency at HPS, has developed the proposed plan with the support of the U.S. Environmental Protection Agency (EPA), the California Department of Toxic Substances Control, and the California Regional Water Quality Control Board for the San Francisco Bay Region. This fact sheet fulfills both federal and state legal requirements that ensure that the public has an opportunity to comment on environmental cleanup activities.

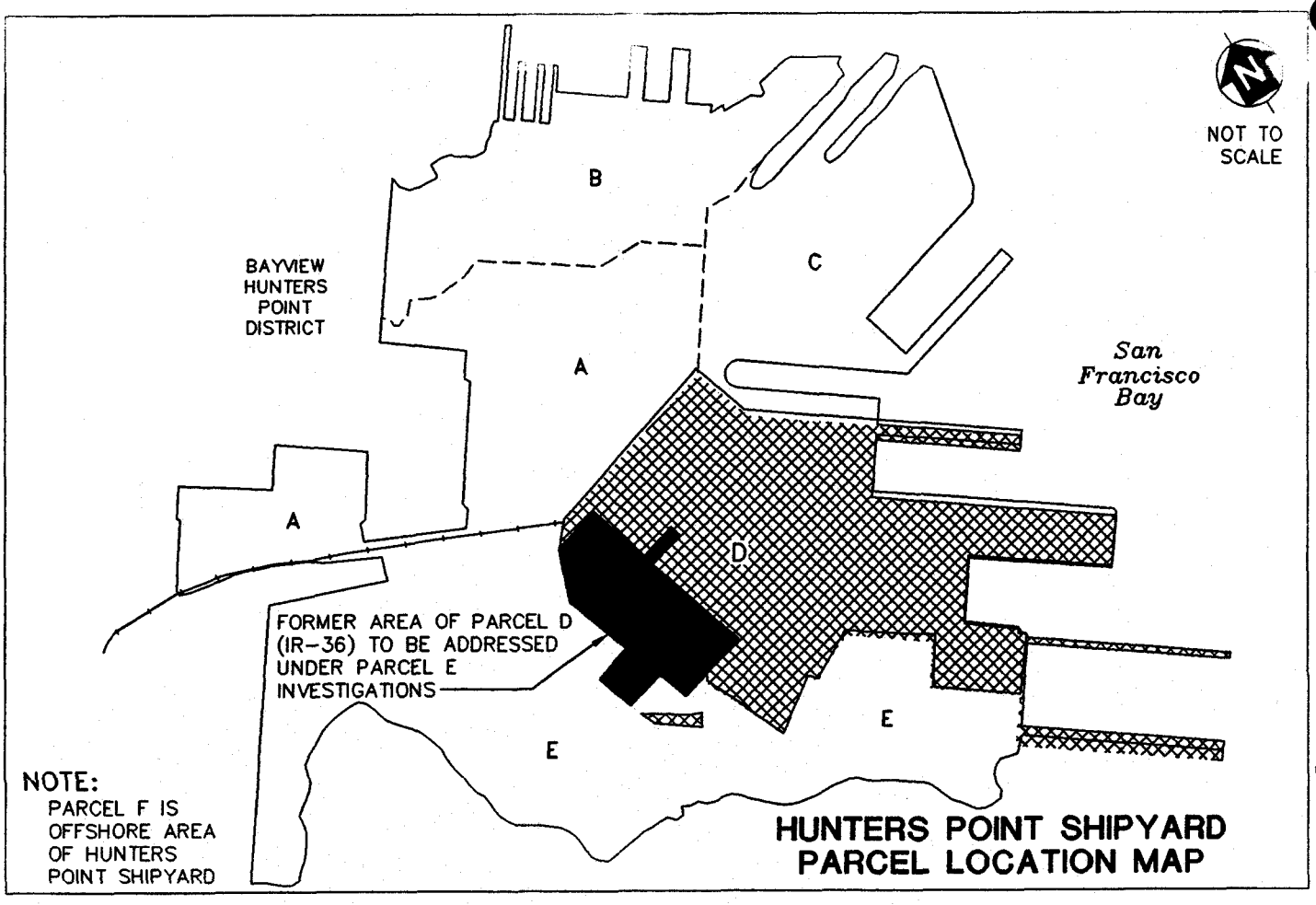
SITE DESCRIPTION

HPS is located in southeastern San Francisco and includes about 936 acres, 443 of which are on land and the rest under San Francisco Bay water. In 1940, the Navy began using HPS to build, repair, and maintain war ships. After World War II, HPS was used for submarine repair and testing activities. Between 1976 and 1986, the Navy leased most of the property to a privately-owned ship repair firm. Past industrial activities at HPS included ship and engine repair, metal plating, and painting. During these activities, fuels, cleaning solvents, and other types of waste may have leaked or spilled onto the HPS property. By 1986, the Navy again occupied HPS and began a program to investigate and clean up contamination caused by past activities.

SITE BACKGROUND

HPS is a site scheduled for environmental cleanup and return to the community for reuse. The shipyard has been divided into six parcels (A through F) -- five on shore and one off shore -- to better manage and prioritize the cleanup (see the map below). HPS Parcel D consists of about 100 acres in the southeast portion of HPS. A 28-acre area of Parcel D called IR-36 will be addressed as part of Parcel E environmental investigations.

In the past, Parcel D was mostly used for shipping and ship repair activities. In support of the ship repair activities, the Navy also conducted industrial activities at Parcel D such as fuel storage and distribution, sandblasting and painting operations, machining, acid mixing, and metal fabrication. Much of Parcel D is covered by concrete, asphalt, or buildings. Based on the reuse plan developed by the City of San Francisco, after Parcel D is transferred from the Navy to the City and County for reuse, it will be zoned for primarily commercial (industrial) use, including industrial complexes, a maritime district, an educational complex, and a cultural/historic district. A small mixed residential/retail complex is planned for the northwest corner of the parcel.



WHAT IS A HUMAN HEALTH RISK ASSESSMENT?

A **human health risk assessment (HHRA)** is an evaluation of possible human health hazards associated with exposure to contamination from a site. The HHRA considers a number of factors to determine risks posed by a site. These factors include (1) the types and amounts of contaminants present at the site, (2) the amount of contamination that may cause health effects, (3) the ways by which people can be exposed to site contamination, and (4) the risks posed to human health. The HHRA for Parcel D was performed in accordance with EPA and California EPA guidance.

HHRAs evaluate two types of health risks - cancer-related and noncancer-related. A cancer-related risk is the potential that people exposed to contamination may develop cancer as a direct result of the exposure. Studies on cancer-related risks use a type of numeric shorthand to express potential risk. *It is important to understand this numeric shorthand in order to understand the results of these studies.* A risk of 1 in 1,000,000 (which is expressed in shorthand as 1×10^{-6}) means that 1 person in a population of 1,000,000 exposed under the same conditions and time period could develop cancer as a result of exposure. The American Cancer Society estimates that 1 out of 3 people normally develops some form of cancer for reasons related to lifestyle, genetics, diet, or other factors not related to exposure to hazardous waste site contamination, resulting in a normal average of about 330,000 people in a population of 1,000,000 developing cancer. If the risk caused by living at a site such as Parcel D (in its current condition) is 1 in 1,000,000, the risk of cancer is increased by 1 person and the number of people *potentially* developing cancer over a lifetime is 330,001 instead of 330,000; if the risk is 1×10^{-5} (or 10 in 1,000,000), the risk of cancer is increased by 10 people. That is, the number of people potentially developing cancer in the population of 1,000,000 over a lifetime is 330,010.

According to EPA guidance, sites that pose potential carcinogenic risks equal to or greater than 1×10^{-4} (or 100 in 1,000,000) generally require some type of cleanup action. In addition, sites posing potential risks equal to or less than 1×10^{-6} (or 1 in 1,000,000) generally do not require cleanup. To guide cleanup decisions about sites that fall between these two risk levels, EPA has established a risk management range of 1×10^{-4} (or 100 in 1,000,000) to 1×10^{-6} (or 1 in 1,000,000). Cleanup decisions for sites posing risks within this range take into consideration other site-specific factors such as probable future land use, types of contamination present, availability of cleanup technologies, and cost.

A noncancer-related risk is the potential risk that people exposed to site contamination may develop adverse health effects other than cancer (such as skin rashes, high blood pressure, eye irritation, and organ damage) as a direct result of exposure to site contamination. Noncancer-related risks are expressed as ratios to reference doses. A reference dose is the safe level of a contaminant below which no adverse health effects are expected to result. If the ratio is one or greater, adverse health effects may occur. If the ratio is less than one, no adverse health effects are expected to occur.

To ensure that public health is protected, conservative health-protective assumptions are used to evaluate human health risks. For example, the HHRA for Parcel D assumed that future workers on the property would be exposed to contamination for 8 hours a day, 250 days per year over a period of 25 years. Typical exposure to contaminants, however, may be much less.

HHRA results are used in combination with information obtained from environmental investigations to set cleanup goals. These goals include decisions about how the exposures can be reduced to protect human health and the environment.

ENVIRONMENTAL INVESTIGATION RESULTS

Based on past activities and uses, the Navy identified areas at 27 sites at Parcel D where contaminants may have been released into the soil or groundwater. These sites are called Installation Restoration (IR) sites. The Navy has recently completed an environmental study called a **remedial investigation (RI)** at Parcel D to gather information to determine the types, amounts, and locations of Parcel D contamination. During the RI, soil and groundwater samples were collected throughout Parcel D at these IR sites. RI results show that Parcel D soil and groundwater contain chemical contaminants at elevated levels. Chemicals in Parcel D soil include **organic compounds** (including **volatile organic compounds [VOC]** and **semivolatile organic compounds [SVOC]**); **inorganic compounds** (including **metals**); **polychlorinated biphenyls (PCB)**; **petroleum hydrocarbons**; **polynuclear aromatic hydrocarbons (PAH)**; and **pesticides**. To reduce contaminants to a safe level for industrial use, the Navy will remediate approximately 13,160 cubic yards of soil.

Four locations at Parcel D have groundwater that contain metals or organic compounds in concentrations that exceed ecological screening criteria. However, modeling shows that groundwater contamination at these inland areas will naturally dilute to safe levels by the time it reaches San Francisco Bay. One location at Parcel D, IR-36, has groundwater that contains organic compounds that may pose a risk if inhaled. This area will now be addressed as part of Parcel E environmental investigations.

The Parcel D RI report can be found at the information repositories listed on the last page of this fact sheet. Section 4.1 of the RI report discusses the spatial distribution of contaminants in soil and groundwater; Sections 4.2 though 4.32 present information on each IR site including RI results, the nature and extent of contaminants, contaminant fate and transport, potential health risks and hazards, and conclusions and recommendations; Section 5.1 presents IR-site summaries; and Section 5.3 presents a summary of conditions throughout Parcel D.

POTENTIAL RISKS TO HUMAN HEALTH AND THE ENVIRONMENT

Information from the Parcel D RI was used to assess risks to human health and the environment posed by Parcel D contamination. For more information on assessing risk, please see the box on Page 3 entitled, "What is a Human Health Risk Assessment (HHRA)?" The results of the HHRA and information about potential environmental risks are discussed below. The Parcel D HHRA evaluated potential health risks posed by soil and groundwater contamination at Parcel D *in its current condition* if no cleanup actions are taken at the property. The complete HHRA is located in Appendix N of the RI report, which is available for review at the information repositories listed on the last page of this fact sheet.

The HHRA evaluated potential human health risks under three different land-use scenarios: (1) risks to current workers if the property continues to be used as it is currently being used, (2) risks to future residents if the property is developed for residential use, and (3) risks to future workers if the property is developed for industrial use (which would include commercial use as specified in the City's reuse plan for Parcel D). The City's future land-use plan for Parcel D specifies primarily commercial use, making the third land use scenario the most similar to the City's future land-use plan; therefore, this section discusses the potential risks posed to future workers under the future industrial land-use scenario.

The HHRA results show that two types of possible risk are posed by contaminated soil at Parcel D under the future industrial land-use scenario. The first type of risk involves the potential for future workers to ingest, come in contact with, or inhale soil contaminated with cancer-causing chemicals. According to EPA guidance, the Navy must cleanup contamination that causes a cancer-risk greater than 1×10^{-4}. For contamination that causes a cancer-risk between 1×10^{-4} and 1×10^{-6}, the Navy and the regulatory agencies use risk management considerations to determine the appropriate cancer-risk cleanup level.

The Navy proposes to reduce the cancer-risk to an acceptable level by cleaning up the majority of Parcel D to levels appropriate for industrial future use with a cancer-risk level no greater than 1×10^{-5}. For the small area in the northwest corner of Parcel D that the City has designated as mixed-use, the Navy's proposed cancer-risk cleanup goal is appropriate for residential use with a cancer-risk level no greater than 1×10^{-6}. The map on Pages 6 and 7 shows the IR site locations that require remediation based on the Navy's proposed cancer-risk cleanup levels. The Navy believes that these cleanup goals are appropriate for Parcel D based on several site-specific factors. These site-specific

factors include the high cost differential between achieving industrial cleanup levels of 1×10^{-5} and 1×10^{-6}, the City's planned future industrial land use, and the elevated risk associated with **ambient** metals in Parcel D soil. The figure on Page 8 presents the Navy's cancer-risk cleanup goal and illustrates the factors that were considered in establishing that goal.

The HHRA results show that about 4 percent of Parcel D soil contains contaminants that could pose a potential cancer risk greater than the proposed cleanup goal. The Navy's preferred alternative would remediate this 4 percent of Parcel D soil. The HHRA also shows that lead-related risks (discussed below) are the only noncancer risks posed to future workers by Parcel D soil.

The second type of risk posed by Parcel D soil involves the potential for future workers to ingest, come in contact with, or inhale soil contaminated with lead. The HHRA shows that less than 1 percent of Parcel D soil contains lead at concentrations that could pose potential health risks. The Navy's preferred alternative would remediate this 1 percent of Parcel D soil.

The HHRA also evaluated potential health risks posed to future workers by Parcel D groundwater. Contaminants were detected in Parcel D groundwater; however, Parcel D groundwater has not been used for drinking water, industrial, or irrigation purposes in the past and is not likely to be used for such in the future. Parcel D groundwater does not meet the legal definition of a drinking water source. In addition, the City of San Francisco discourages the installation of private and industrial wells in the City.

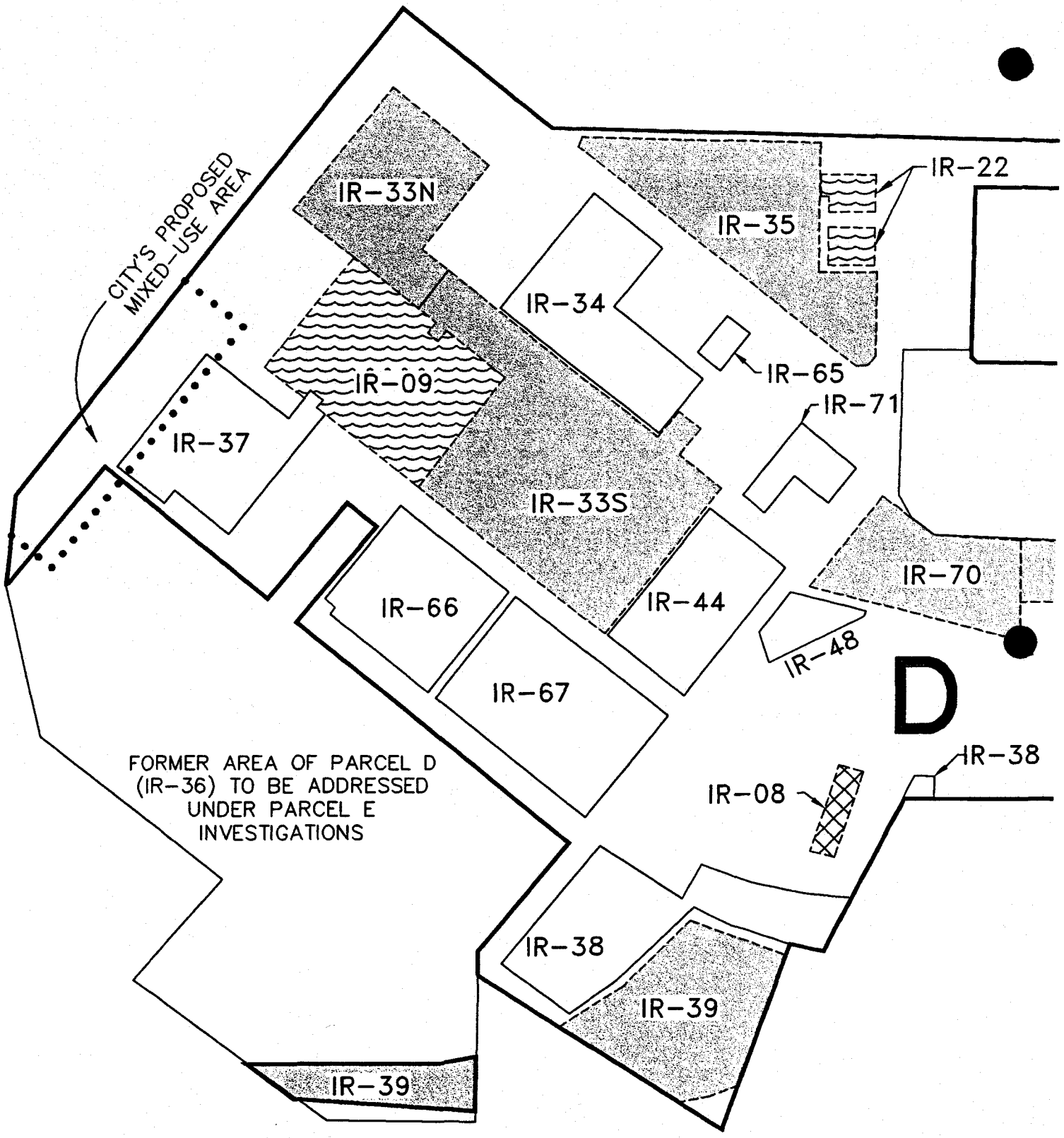
Because potential ingestion of and contact with groundwater at Parcel D are highly improbable, risks from ingestion and contact with groundwater were not considered during the development of Parcel D cleanup alternatives. The HHRA also evaluated **volatilization** of contaminants from groundwater into the indoor air in buildings. Under the industrial land use scenario, no risk is associated with contaminants volatilizing to indoor air. In summary, no risk exists under the industrial scenario from ingestion of, dermal contact with, or inhalation of contaminants in Parcel D groundwater; therefore, Parcel D groundwater does not pose a threat to humans. A former area of Parcel D (IR-36) in which groundwater contamination may pose a health risk from inhalation will be addressed as part of Parcel E investigations.

Information obtained during the RI was used to determine whether contaminants at Parcel D pose any potential environmental risks. Parcel D is generally an industrial area covered mostly with asphalt which contains no plants or land animals and is not an environmentally sensitive area. As a result, Parcel D soil presents a low ecological risk because there are no plants or animals being exposed to soil contamination. Parcel D groundwater does not present an ecological risk to marine life in San Francisco Bay. Groundwater entering the San Francisco Bay from Parcel D has been shown by modeling to meet both local and national water quality criteria set for the protection of San Francisco Bay marine life.

An ecological risk assessment is currently being conducted on the sediments in the Bay surrounding HPS. To date, preliminary results of the ecological assessment do not show environmental risks from Parcel D. The ecological risk assessment is expected to be completed in Fall 1997.

HEALTH RISKS AND THE PREFERRED ALTERNATIVE

The results of the HHRA show that Parcel D soil poses potential health risks to people who may work on Parcel D in the future if the parcel remains in its current condition. The Navy's preferred alternative would reduce or eliminate health risks and clean up contaminants at Parcel D to acceptable levels for industrial (including commercial) use.



CONTAMINANTS DE
PROPOSED CANCE
AT PA

NOTE:
AREAS WITHIN THE IR-SITES THAT POSE A RISK ABOVE THE NAVY'S PROPOSED CANCER-RISK CLEANUP GOAL WOULD BE REMEDIATED ACCORDING TO THE NAVY'S PREFERRED ALTERNATIVE

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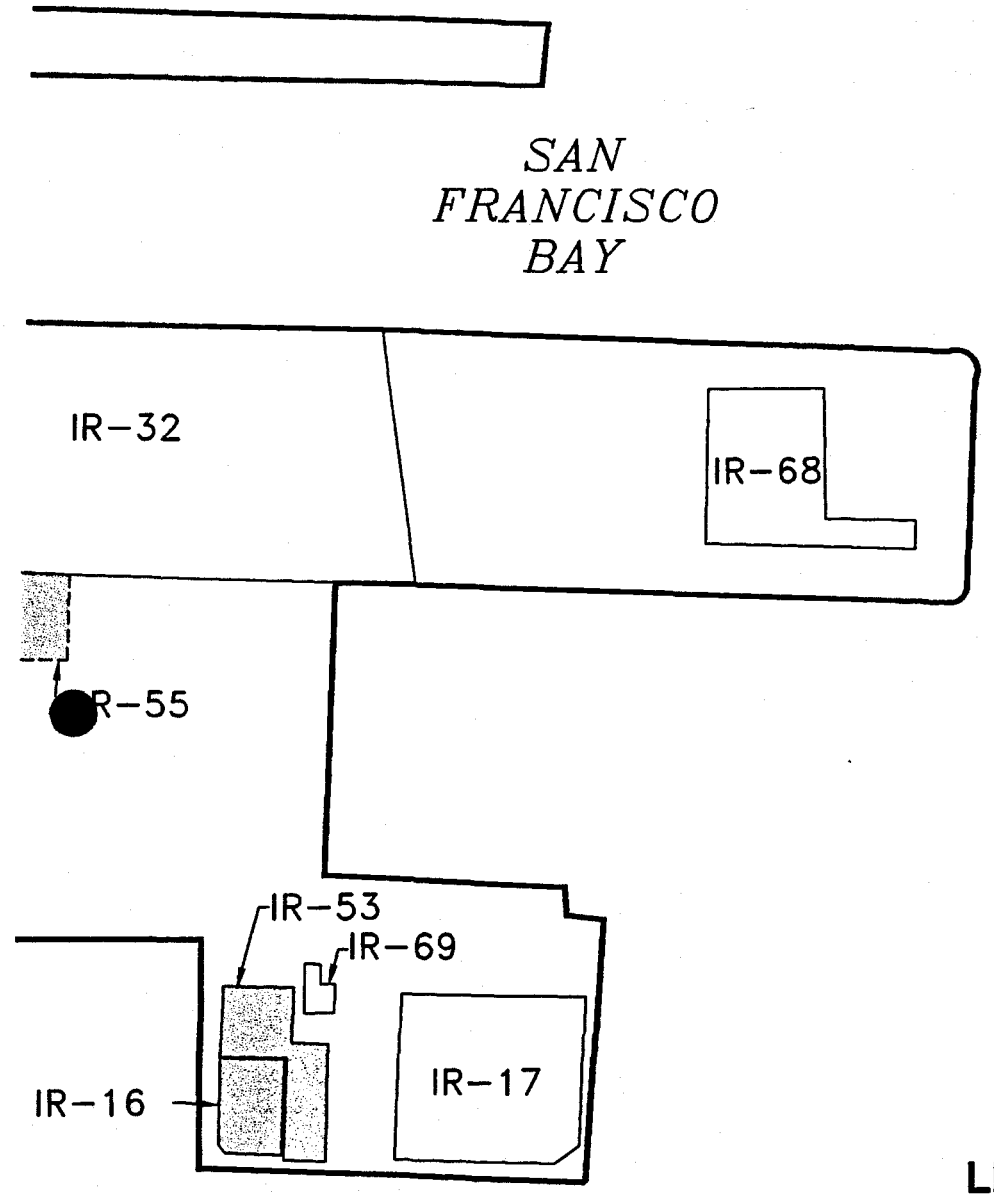
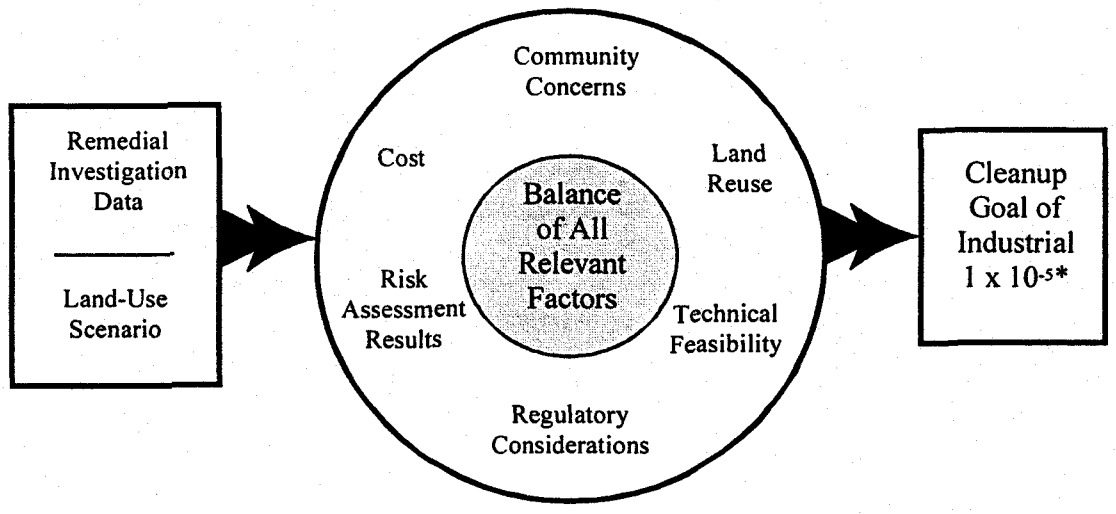


TECTED ABOVE THE
R K CLEANUP GOAL
RCEL D

LEGEND

- Areas of Parcel D that do not pose an unacceptable risk
- IR sites containing metals and SVOCs detected above the proposed cancer-risk cleanup goal (IR-09, IR-22)
- IR sites containing metals, SVOCs, and PCBs detected above the proposed cancer-risk cleanup goal (IR-16, IR-33N, IR-33S, IR-35, IR-39, IR-53, IR-55, IR-70)
- IR site containing metals, SVOCs, PCBs, and pesticides detected above the proposed cancer-risk cleanup goal (IR-08)

ESTABLISHING A CANCER-RISK CLEANUP GOAL



*The Navy proposes to clean up the majority of Parcel D to a level appropriate for industrial use with a cancer-risk level no greater than 1 x 10^{-5} where technically feasible. Cleanup to industrial levels requires that recorded deed restrictions be placed on Parcel D to ensure that future use is only industrial or commercial. The Navy also proposes to meet a cleanup goal appropriate for residential use with a cancer-risk level no greater than 1 x 10^{-6} in the northern portion of Parcel D, which is zoned for mixed use and which may include residential use under the City's reuse plan. Evaluations show that residential criteria are currently met in this portion of Parcel D and no cleanup activities are required.

THE CLEANUP ALTERNATIVES CONSIDERED

Based on the RI and HHRA results, the Navy conducted a **feasibility study (FS)** to identify and evaluate cleanup technologies (or alternatives) that could be used at Parcel D. The study identifies and evaluates five alternatives for addressing Parcel D contamination. Descriptions of the alternatives follow. The alternatives were evaluated and compared based on EPA's nine evaluation criteria described in the figure on Page 13. These criteria must be used to evaluate and select the best cleanup alternative to address contamination at a site. EPA guidance requires that the cleanup alternative ultimately selected for a site meet all nine of these criteria. Results from evaluating and comparing Parcel D alternatives in terms of the nine evaluation criteria are discussed in the table on Page 14. The FS report contains both detailed descriptions and a detailed evaluation and comparison of the alternatives.

Two of the cleanup alternatives considered for Parcel D include using treated soil as part of a cleanup action for another HPS parcel called Parcel E. Parcel E contains a landfill referred to as the "IR-1/21 landfill." The landfill was used for waste disposal for several years; however, it is no longer in use and has been fenced off to prohibit access and protect the public. Two of the soil alternatives discussed below include using treated soil from Parcel D as sub-base foundation material for an IR-1/21 landfill cap. Landfill capping is a cleanup method that has been used at many other municipal landfills. Implementation of either of these two alternatives would require integration with the selection of the cleanup action for Parcel E and the IR-1/21 landfill.

The FS evaluated three cleanup scenarios: (1) industrial future land use with a cancer-risk cleanup goal of 1 x 10^{-5}, (2) industrial future land use with a cancer-risk cleanup goal of 1 x 10^{-6}, and (3) residential future land use with a cancer-risk cleanup goal of 1 x 10^{-6}. All of the alternatives discussed below can be implemented to meet cancer-risk cleanup levels from 1 x 10^{-4} to 1 x 10^{-6}. (Cancer-risk cleanup levels are discussed in greater detail under "Potential Risks to Human Health and the Environment" on Page 4.) Not all of the technologies discussed under the alternatives will have to be used to meet the Navy's cancer-risk cleanup goal. *Only the quantities of soil requiring remediation to meet the Navy's proposed cleanup goal of 1 x 10^{-5} for industrial use are discussed below.*

Under the Navy's proposed cleanup goal, all of the alternatives considered will include future land use that is limited to industrial or commercial use by recorded deed restriction, except for the northwest corner of Parcel D (planned for residential reuse) where evaluations show that residential criteria are met.

Alternative 1: No Action

Under this alternative, no action would be taken to clean up soil and groundwater contamination. Contaminated soil and groundwater would be left "as is." Regulations require that a no-action alternative be considered as a baseline against which other cleanup alternatives can be evaluated and compared.

No time would be required to implement this alternative, and no costs are associated with this alternative.

Alternative 2: Excavation and Off-Site Disposal *(The Navy's Preferred Alternative)*

Under this alternative, soil requiring cleanup would be excavated; transported off site; treated at the disposal facility (landfill), if necessary; and disposed of in licensed landfills. Excavated soil will be managed near each excavation area or at a central location within HPS. Soil may need to be dried, or "dewatered," before it is taken to an off-site facility for treatment and disposal. Excavated soil will be managed according to federal and state requirements. The excavated area would be backfilled with clean soil and paved or seeded. To meet the Navy's preferred cleanup level of 1×10^{-5} for industrial reuse, 13,160 cubic yards of soil would be excavated and disposed of off site.

All of the alternatives include identical components for addressing groundwater contamination, which include implementing mitigative measures, monitoring groundwater, and restricting future groundwater use. These mitigative measures would be taken to address storm drains and steam lines located throughout Parcel D that may act as a preferential pathway for groundwater contaminants to enter San Francisco Bay. Sections of the storm drain system would be lined and the bedding material grouted. Steam lines would be removed and disposed of off site. Groundwater would be monitored to evaluate the effectiveness of soil source removal. The Navy would prepare a contingency plan describing actions that would be taken if groundwater monitoring results indicate that additional activities are necessary.

Approximately 4 to 8 months would be required to implement this alternative. To meet a cancer-risk cleanup goal of 1×10^{-5} for industrial reuse, the estimated cost of this alternative, expressed as its **net present value**, is $11,778,000.

Alternative 3: In Situ Soil Vapor Extraction, Ex Situ Solidification and Stabilization (S/S), and On-Site Placement

Under this alternative, two types of treatment technologies would be implemented to address the different types of contamination present at Parcel D: the first technology would treat VOC contamination and the second technology would treat metals contamination. Soil containing VOCs would be treated "in situ" (or in place) by soil vapor extraction (SVE), a treatment technology that removes harmful chemicals from soil. In an SVE system, pipes containing holes are sunk into the ground with the ends of the pipe above ground surface. A vacuum is then attached to the ends of the pipes to draw air from the soil through the pipes. As the air passes through the soil, the chemicals move from the soil and are carried through the air as it travels out of the pipe. Air containing the chemicals is then trapped in a container for further treatment.

SVE-treated soil that also contains metals and the remaining soil requiring cleanup would be excavated and treated "ex situ" (or out of place) by solidification and stabilization (S/S). S/S is a technology used to treat soil containing a variety of chemicals including metals. During the S/S process, contaminated soil is mixed with a material that binds the soil and contaminants together to form a solid, concrete-like mass from which contaminants are unable to move. S/S-treated soil would be used as a sub-base foundation layer for the IR-1/21 landfill cap at Parcel E or shipped off site. Excavated soil

would be managed near each excavation area or at a central location within HPS according to federal and state requirements. The excavated area would be backfilled with clean soil and paved or seeded. To meet the Navy's preferred cleanup level of a 1 x 10^{-5} for industrial reuse, no soil would require SVE treatment and 13,160 cubic yards of soil would require S/S treatment and disposal.

All groundwater components described under Alternative 2 would be implemented.

Approximately 5 to 24 months would be required to implement this alternative. To meet a cancer-risk cleanup goal of 1 x 10^{-5} for industrial reuse, the estimated net present value of this alternative is $12,371,000.

Alternative 4: Excavation, Ex Situ Thermal Desorption, Ex Situ S/S, and On-Site Placement

Under this alternative, two types of treatment technologies would be implemented to address the different types of contamination present at Parcel D: the first technology would treat VOC contamination and the second technology would treat metals contamination. Soil containing VOCs would be treated by thermal desorption (TD). During the TD process, contaminated soil is heated in an oven-like machine to separate harmful chemicals from soil and move them into the air. The air containing the chemicals is then moved to another container for additional treatment or disposal, and the soil is cooled and either used as backfill or treated further. TD-treated soil containing metals and the remaining excavated soil requiring cleanup would then be treated by S/S. All treated soil would be used as a sub-base foundation layer for the IR-1/21 landfill cap at Parcel E or shipped off site. Excavated soil will be managed near each excavation area or at a central location within HPS according to federal and state requirements. The excavated area would be backfilled with clean soil and paved or seeded. To meet the Navy's preferred cleanup level of a 1 x 10^{-5} for industrial reuse, no soil would require TD treatment and 13,160 cubic yards of soil would require S/S treatment and disposal.

All groundwater components described under Alternative 2 would be implemented.

Approximately 10 to 20 months would be required to implement this alternative. To meet a cancer-risk cleanup goal of 1 x 10^{-5} for industrial reuse, the estimated net present value of this alternative is $12,371,000.

Alternative 5: In Situ SVE and In Situ S/S using Shallow Soil Mixing

Under this alternative, two types of treatment technologies would be implemented to address the different types of contamination present at Parcel D: the first technology would treat VOC contamination and the second technology would treat metals contamination. Soil contaminated with VOCs would be treated in situ by SVE. SVE-treated soil that also contains metals and the remaining soil requiring cleanup would then be treated in situ by S/S using a process called shallow soil mixing. For in situ S/S, the top 4 feet of soil and soil containing minimal contamination would be excavated; transported off site; treated at the disposal facility (landfill), if necessary; and disposed of in licensed landfills. This soil would be removed to allow for the additional volume caused by in situ S/S. During shallow soil mixing, a crane is used to guide mixing blades into soil. As the blades mix the soil, solidifying material is injected into the soil to form a solid, concrete-like mass out of which chemicals are unable to move. Also under this alternative, recorded deed restrictions would be imposed to restrict future excavation and construction activities at areas containing S/S treated soil, thereby reducing the potential for human contact with harmful chemicals bound in the soil. To meet the Navy's preferred cleanup level of 1 x 10^{-5} for industrial reuse, no soil would require SVE treatment and 13,160 cubic yards of soil would require S/S treatment and disposal.

All groundwater components described under Alternative 2 would be implemented.

Approximately 7 to 20 months would be required to implement this alternative. To meet a cancer-risk cleanup goal of 1 x 10^{-5} for industrial reuse, the estimated net present value of this alternative is $11,335,000.

CLEANUP GOALS

Based on the RI and HHRA results, the Navy has developed the following general goals for cleaning up Parcel D:

- Protect human health and the environment
- Clean up contamination to levels that would allow safe property reuse
- Expedite property transfer to the City and County of San Francisco

THE PREFERRED ALTERNATIVE

The Navy is proposing Alternative 2, Excavation and Off-Site Disposal, as the preferred alternative for addressing soil and groundwater contamination at Parcel D. Under this alternative, soil containing contamination that poses a risk to human health or the environment would be excavated using equipment such as backhoes and front-end loaders. Site preparation activities, such as clearing utility lines, constructing runon and runoff controls, and demolishing buildings, would also be conducted before excavation. Soil samples would be collected before excavation, and the sampling results, along with sampling results from the RI, would be used to determine the extent of soil to be excavated.

Large debris such as rocks, wood, and concrete would be removed from excavated soil and the debris and excavated soil would be managed separately prior to disposal. Original grading will be maintained or increased, in appropriate areas, to collect rainwater runoff in the area. During rainy weather, excavated soil and debris would be covered with plastic sheeting to minimize the seepage of rainwater into the material. The excavated soil and debris would be sampled to determine the appropriate disposal facility, transported (preferably by rail) off site to a disposal facility (landfill) for treatment, if necessary, and disposed of safely.

Clean imported soil would be brought on site, placed in the excavated areas, and compacted. Crushed rock or pea gravel would be placed in excavation bottoms where groundwater is present. Asphalt or concrete surfaces would be replaced. Soil surfaces would be replaced with topsoil and seeded with native grass to minimize dust generation and provide erosion control.

Under this alternative, the Navy proposes remediating contamination to meet a cancer-risk cleanup goal of 1×10^{-5} for industrial reuse. Therefore, future land use would be limited to industrial or commercial use by recorded deed restriction except in the northwest corner of Parcel D (planned for residential reuse) where evaluations show that residential criteria are met. The Navy believes that this cleanup goal is appropriate for Parcel D based on several site-specific factors, including the high cost differential between industrial cleanup goals, the City's planned future industrial land use, and the elevated risk associated with ambient metals in Parcel D soil.

Although contaminants were detected in groundwater, the groundwater cleanup goals are currently met and, therefore, no groundwater cleanup action is required. Future groundwater use would be restricted by implementing recorded deed restrictions. In addition, mitigative measures would be taken to address storm drains and steam lines located throughout Parcel D that may act as preferential pathways for contaminants to enter San Francisco Bay. Sections of the storm drain system would be lined and the bedding material grouted. Steam lines would be removed and disposed of off site. Groundwater would be monitored for up to 30 years to evaluate the efficiency of soil source removals. The Navy would prepare a contingency plan describing actions that would be taken if groundwater monitoring results indicate that additional activities are necessary. A former area of Parcel D (IR-36) in which groundwater contamination may pose a health risk from inhalation will be addressed as part of Parcel E investigations.

This alternative would protect human health and the environment by permanently removing contaminated soil and eliminating the potential for human contact with, ingestion of, or inhalation of contaminants in soil or groundwater. During excavation work, controls will be used to protect site workers, current industrial tenants, the community, and the environment from dust and emissions.

The Navy is recommending the preferred alternative for several reasons. The preferred alternative meets EPA's nine evaluation criteria as shown on the "Detailed Analysis of Alternatives" table on Page 14. The alternative would protect human health and the environment by effectively achieving the cleanup objectives and goals established for Parcel D while complying with ARARs. The alternative would remain effective over the long-term and permanently reduce the volume of contaminated soil at Parcel D by removing contaminated soil from Parcel D and disposing of it safely off site. Contaminant mobility would be minimized by proper containment of the soil at the off-site landfill, and contaminant toxicity would be reduced if off-site treatment is required prior to disposal at the landfill.

The preferred alternative is easier to implement than the other alternatives considered and is cost competitive. The community is expected to accept the alternative based on the opposition to on-site treatment and on-site disposal t has been expressed during regular community meetings.

The preferred cleanup goal of 1×10^{-5} for industrial reuse is appropriate for Parcel D based on several site-specific factors, including the high cost differential between cleanup goals, the City's planned future industrial land use, and the elevated risk associated with ambient metals in Parcel D soil.

Finally, the preferred alternative is supported by both EPA and the State of California while striking the best balance between meeting both the **Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)** objectives of cleaning up Parcel D and the **Base Realignment and Closure (BRAC) Program** objective of expediting the transfer and reuse of Parcel D.

THE NEXT STEPS

The Navy will review and evaluate all public comments received before selecting a final cleanup plan. The selected cleanup plan will be announced in a document called a "record of decision (ROD)," which will be made available to the public at the information repositories and in the administrative record listed on the last page of this fact sheet. The Navy will respond to public comments in a portion of the ROD called the "responsiveness summary." The Navy will then prepare an engineering design of the selected remedy and conduct the cleanup action. The Navy will also continue conducting cleanup investigations and actions in other HPS parcels.

SELECTING A CLEANUP REMEDY

Nine criteria, or standards, are used to evaluate alternatives for addressing a hazardous waste site. The nine criteria are as follows:

1 Overall Protection of Human Health and the Environment

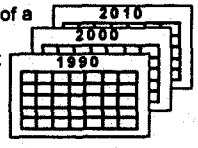
This criterion addresses whether a potential remedy would reduce, eliminate, or control the risks to human health and the environment posed by the site. The methods used to achieve an adequate level of protection may be engineering controls, treatment techniques, or other controls such as restrictions on the future use of the site. Total elimination of risk is often impossible to achieve. However, a remedy must minimize risk to assure that human health and the environment would be protected.

2 Compliance with ARARs

Compliance with **applicable or relevant and appropriate requirements** (ARAR) assures that a selected remedy will meet all federal and and state requirements. The requirements may specify maximum concentrations of chemicals that can remain at a site; design requirements for treatment technologies; or restrictions that may limit potential remedial activities at a site because of its location.

3 Long-Term Effectiveness or Permanence

This criterion addresses the ability of a potential remedy to reliably protect human health and the environment over time, once cleanup goals have been met.



4 Reduction of Toxicity, Mobility, or Volume of Contaminants

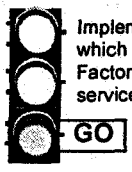
This criterion assesses how effectively a potential treatment technology will address the contamination problem. Factors considered include the nature of the treatment process; the amount of hazardous materials that will be destroyed by the treatment process; how effectively the process reduces the toxicity, mobility, or volume of waste; and the type and quantity of contamination that will remain after treatment.

5 Short-Term Effectiveness

This criterion addresses the length of time required for implementation of a potential remedy and the possible impact on human health and the environment posed by remedy implementation.

6 Implementability

Implementability addresses the ease with which a potential remedy can be put in place. Factors such as availability of materials and services are considered.



7 Cost

Costs (including capital costs required for design and construction and projected long-term maintenance costs) are considered.

8 State Acceptance

The state has an opportunity to review the FS and Proposed Plan and submit comments. A state may agree with, oppose, or have no comment on the preferred remedy.

9 Community Acceptance

This criterion assesses whether community concerns are addressed by a potential remedy and whether the community has a preference for a remedy. Although public comment is an important part of the final decision, the lead agency is compelled by law to balance community concerns with all of the previously mentioned criteria.

E

DETAILED ANALYSIS OF ALTERNATIVES

Evaluation Criterion	Cleanup Alternatives				
	1	2	3	4	5
Overall Protection of Human Health and the Environment	This alternative would not protect human health or the environment. Present health risks from soil contamination would remain, and no steps would be taken to address groundwater contamination or monitor groundwater to protect aquatic life in the Bay.	Human health would be protected by permanently removing contaminated soil and safely disposing of it off site. Aquatic life in the Bay would be protected by eliminating the preferential pathways for contaminants to enter the Bay and monitoring groundwater.	Human health would be protected by reducing contaminants in soil through treatment and safe use of the IR-1/21 landfill. Aquatic life in the Bay would be protected by eliminating the preferential pathways for contaminants to enter the Bay and monitoring groundwater.	Human health would be protected by reducing contaminants in soil through treatment and safe use of the IR-1/21 landfill. Aquatic life in the Bay would be protected by eliminating the preferential pathways for contaminants to enter the Bay and monitoring groundwater.	Human health would be protected by reducing contaminants in soil through treatment. Aquatic life in the Bay would be protected by eliminating the preferential pathways for contaminants to enter the Bay and monitoring groundwater.
Compliance with Applicable or Relevant and Appropriate Requirements (ARAR)	This alternative would not comply with ARARs.	This alternative would comply with all ARARs.	This alternative would comply with all ARARs.	This alternative would comply with all ARARs.	This alternative would comply with all ARARs.
Long-Term Effectiveness	This alternative would not be effective.	This alternative would remain effective over the long-term because contaminants would be removed and safely disposed of off site.	This alternative would remain effective over the long-term because the mobility and volume of contaminants would be permanently reduced by the use of reliable treatment technologies. On-site placement in the IR-1/21 landfill would safely dispose of treated soil.	This alternative would remain effective over the long-term because mobility and volume of contaminants would be permanently reduced by the use of reliable treatment technologies. On-site placement in the IR-1/21 landfill would safely dispose of treated soil.	This alternative would remain effective over the long-term because the mobility and volume of contaminants would be permanently reduced by the use of reliable treatment technologies.
Reduction of Toxicity, Mobility, or Volume of Contaminants	This alternative would not reduce the toxicity, mobility, or volume of contaminants.	This alternative would permanently reduce the volume of contaminated soil at Parcel D. Contaminant mobility would be minimized by proper handling at off-site landfills. Toxicity of contaminants would be reduced if off-site treatment of soil is required prior to disposal.	This alternative would permanently reduce the mobility and volume of contaminants through SVE and reduce the mobility of contaminants through S/S.	This alternative would permanently reduce the toxicity, mobility, and volume of contaminants through TD and reduce the mobility of contaminants through S/S.	This alternative would permanently reduce the mobility and volume of contaminants through SVE and reduce the mobility of contaminants through S/S.
Short-Term Effectiveness or Permanence	This alternative would not meet cleanup goals.	Community, worker, and environmental impacts during excavation and transport would be minimized by using standard safety controls during implementation. This alternative would meet remedial action goals.	Community, worker, and environmental impacts during treatment would be minimized by using standard safety controls during implementation. Additional hazards to workers may be encountered during SVE treatment. This alternative would meet remedial action goals.	Community, worker, and environmental impacts during treatment would be minimized by using standard safety controls during implementation. Additional hazards to workers would be encountered during TD treatment. This alternative would meet remedial action goals.	Community, worker, and environmental impacts during treatment would be minimized by using standard safety controls during implementation. Additional hazards to workers would be encountered during SVE treatment. This alternative would meet remedial action goals.
Implementability	This alternative would be easy to implement.	This alternative would be easy to implement.	This alternative would be more difficult to implement because it requires coordination with Parcel E cleanup and the IR-1/21 landfill.	This alternative would be more difficult to implement because it requires coordination with Parcel E cleanup and the IR-1/21 landfill.	This alternative would be more difficult to implement because of obstructions related to in situ treatment.
Cost (shown in terms of the alternative's net present value)	$0	$11,778,000	$12,371,000	$12,371,000	$11,335,000
State Acceptance	This alternative would not be accepted by the State.	It is likely that the State would consider this alternative acceptable.	It is likely that the State would consider this alternative acceptable.	It is likely that the State would consider this alternative acceptable.	It is likely that the State would consider this alternative acceptable.
Community Acceptance	This alternative would not be accepted by the community.	Community acceptance is expected based on the opposition to on-site treatment expressed during regular community meetings.	Community acceptance is not expected based on the opposition to on-site treatment expressed during regular community meetings.	Community acceptance is not expected based on the opposition to on-site treatment that has been expressed in regular community meetings.	Community acceptance is not expected based on the opposition to on-site treatment expressed in regular community meetings.

USE THIS SPACE TO WRITE YOUR COMMENTS

Your input on the preferred cleanup alternative and all other cleanup alternatives considered for Parcel D is very important. The Navy will consider and respond to your comments before making a final decision on a cleanup plan for Parcel D.

Use the space below to write your comments and then fold, stamp, and mail this sheet. **Comments must be postmarked by June 10, 1997.** If you have questions about the comment period, please contact Michael McClelland at (415) 244-3048.

Name _____

Address _____

City _____ State _____ Zip _____

Phone _____

MAILING LIST

If you would like to be included in the Navy's mailing list for HPS, please fold, stamp, and mail this form to Michael McClelland at the address below.

Name: _____

Mailing Address: _____

City:_____ State:_____ Zip Code:_____

fold here

_____

_____

_____

(return address)

Please place stamp here

Michael McClelland
Department of the Navy
Engineering Field Activity West
Naval Facilities Engineering Command, Code 62.3
900 Commodore Way, Building 105
San Bruno, CA 94066-2402

GLOSSARY

Ambient: Naturally occurring conditions unrelated to on-site activities.

Applicable or relevant and appropriate requirements (ARAR): Federal and state requirements that a selected remedy must meet. Compliance with ARARs is one of EPA's nine criteria used to evaluate cleanup alternatives for a site.

Base Realignment and Closure (BRAC) program: A program under which Department of Defense (DoD) installations undergo closure, environmental cleanup, and transfer to communities for reuse. Activities under this program are conducted in accordance with the Base Closure and Realignment Act of 1988 and the Defense Base Closure and Realignment Act of 1990.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA): Better known as the "Superfund" law, CERCLA is a law that provides federal authority and money for EPA to respond directly to releases or threatened releases of hazardous substances into the environment.

Feasibility study (FS): A study that identifies, evaluates, and compares alternatives for cleaning up a site.

Human health risk assessment (HHRA): An analysis of the potential negative human health effects caused by hazardous substances released from a site.

Inorganic compound: Chemical substances of mineral, not carbon, origin, such as various metals including arsenic, chromium, mercury, and lead.

Metals: A group of chemical elements characterized by their luster, strength, and ability to conduct electrical and heat energy, such as arsenic, chromium, mercury, and lead.

Net present value: An economic term used to reflect present and future costs of a cleanup alternative in today's dollars. A net present value cost estimate includes construction as well as future operation and maintenance costs. Net present value cost estimates are used to calculate the costs of alternatives for projects that will last beyond a short-term period.

Organic compound: Chemical substances containing carbon such as benzene, toluene, and ethyl benzene.

Pesticides: Substances used to destroy and repel insects or to regulate plants.

Petroleum hydrocarbon: A naturally occurring mixture of compounds that can be refined for use as gasoline and lubricating oil.

Polynuclear aromatic hydrocarbons (PAH): A group of chemicals formed during incomplete burning of coal, gas, refuse, and other substances.

Polychlorinated biphenyls (PCB): A family of organic compounds used in electric transformers as insulators and coolants and in lubricants, carbonless copy paper, adhesives, and caulking compounds, that were banned in 1976.

Remedial investigation (RI): An investigation that identifies the types, amounts, and locations of contaminants at a site.

Semivolatile organic compounds (SVOC): Organic compounds (see definition above) with low evaporation rates contained in materials such as laboratory cleaners, diesel fuel, and motor oil.

Volatile organic compounds (VOC): Organic compounds (see definition above) that evaporate quickly when exposed to air. VOCs are commonly used in dry cleaning chemicals, paint stripping compounds, and degreasers.

Volatilization: The process by which a chemical evaporates into the air.

FOR MORE INFORMATION

If you have any questions about this proposed plan or cleanup activities for Parcel D, please write to **Michael McClelland, U.S. Navy**, at the address shown on the mailing list form inside this fact sheet or contact him at: (415) 244-3048 (telephone) or (415) 244-3010 (fax number).

The Navy maintains two information repositories for HPS that contain project documents (including the Parcel D RI report, FS report, and proposed plan), fact sheets, and other reference materials. The Navy encourages you to review these documents to gain a more complete understanding of the investigations that have been conducted at Parcel D. The administrative record for Parcel D is available at the Department of the Navy, Engineering Field Activity West, Naval Facilities Engineering Command, 900 Commodore Way, Building 105, San Bruno, California, 94066-2402.

City of San Francisco Main Library
Civic Center
San Francisco, CA 94102
(415) 557-4400

Anna E. Waden Branch Library
5075 Third Street
San Francisco, CA 94124
(415) 715-4100

Please call the respective libraries for business hours.

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